

REMARKS

Claim Rejections – 35 USC § 102

The Examiner rejects claims 13, 15, 17-20, 24-26, 30, 31 and 33-40 under 35 USC 102 as being anticipated by *Hobbs* (US 2,8780,41).

There are significant differences between *Hobbs* and the present application. The present invention relates to a coupling in which a sealing ring is located between surfaces of tube portions which run parallel to the longitudinal axis of the tubular sections, i.e. the sealing surfaces face inwardly and outwardly respectively as shown in the figures especially. The sealing ring is also in a sliding overlap portion of the coupling. On the other hand *Hobbs* shows vertical sealing surfaces. There are many advantages to the structure now recited in claims 13 and 20:

a) the sealing surfaces are less prone to possible damage during handling of the end portions and as such, damage on this surface (e.g. scratches) will be avoided or significantly reduced. As a result, risk of leaking will be minimized since scratches can generate leaks in a vacuum fitting. In *Hobbs* the sealing surface is easily reachable and could be damaged, degrading vacuum integrity.

b) The mechanical design of the structure recited in new claims 1 and 20 is such that during clamping, whatever torque is applied on the bolts, the compression ratio of the sealing ring remains the same, i.e. if optimal seal compression has been designed in, then this is kept independent of the torque thus providing a reliable, operator independent seal. For example, for an O-ring, the amount of deformation will always be exactly the same and optimal for the requested sealing behaviour. The designs of *Hobbs* is not so reliable. Seal quality depends upon the tightening of the bolts. Overtightening could result in over-squeezing and even damaging the sealing ring resulting in deterioration of sealing properties.

c) Accordingly, accurate application of a torque wrench for all bolts is required in *Hobbs* to realize uniform pressure on the sealing ring. In the claimed design however, by concept, the pressure is uniformly spread over the sealing ring, even for a single bolt application.

d) The design recited in the claims is particularly suitable for a rotatable coupling as required by a coupling for a rotating cylindrical sputtering target as recited in claim 20. Targets can be very heavy and are usually not perfectly rotationally balanced. This means that there is a cyclic vertical and horizontal load on the coupling as the target rotates. With the claimed design, slight movements of, or strains on the clamping parts will not affect the seal. Provision of a reliable coupling for a rotating cylindrical target and spindle is one of the major advantages of the present invention and is now specifically recited in new claim 41. On the other hand, in the coupling of *Hobbs*, there is a danger that loosening of, or cyclic strain on the bolts will cause leaks as the vertical sealing surfaces will move away from each other or relax in some way. Note that the coupling of *Hobbs* is not designed for rotation. It is a joint designed for pressure chambers which are static. There is no motivation to use the coupling of *Hobbs* for a rotating cylindrical sputtering target.

Claim Rejections – 35 USC § 103

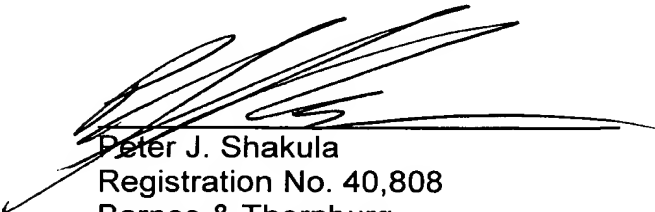
The Examiner rejects claims 14 and 21 as unpatentable over *Hobbs*.

Claims 14 and 21 are dependent claims and assuming that amended claims 13 and 20 are allowable objections to these claims are now mute.

For the foregoing reasons, the claims are submitted to be allowable. As all of the points raised by the Examiner have now been dealt with, further, favorable, reconsideration is requested.

March 25, 2004

Respectfully submitted,



Peter J. Shakula
Registration No. 40,808
Barnes & Thornburg
P.O. Box 2786
Chicago, Illinois 60690-2786
(312) 357-1313
(312) 759-5646 (fax)